Title: Management of facial nerve palsy in newborn period

1. Introduction/Background

Facial nerve palsy in the newborn period may be congenital, caused by conditions acquired during or at birth (e.g. birth trauma) or developmental, a result of developmental abnormalities of facial pathway (isolated or as part of syndromes like Möbius syndrome). The congenital form is most common and carries a good prognosis. More than 90% of infants with congenital facial palsy will recover by 3-6 months. Eye care may be paramount in infants with incomplete eye closure. Persistent residual weakness at 3 months should warrant referral to plastic surgery clinic.
Developmental facial nerve palsy results from developmental mishaps during embryogenesis. This may result from aplasia/hypoplasia of cranial nerve nuclei or abnormal differentiation and neuronal connections of cranial neuronal pools, or from abnormal axonal transport of molecules necessary for muscle function and development. Genetic factors, vascular events, or teratogenic insults have been implicated. Please see Appendix 2 for common causes, their presenting features and management.

2. Patient group
Newborn infants noted to have facial nerve palsy at birth or on postnatal examination.

3. Patient Assessment:
All infants suspected to have facial nerve palsy should be reviewed by a tier 2 Speciality Trainee (registrar). The details of pregnancy, labour and delivery, maternal medical history and family history should be documented.

Facial nerve palsy is usually unilateral and evident by
- Absence of forehead wrinkling
- Shallow or absent nasolabial fold on affected side
- Impaired movement of lips
- Asymmetry of the face especially on crying with deviation of angle of mouth

In severe cases:
- Impaired eye closure
- Complete absence of facial movements on affected side
- Facial asymmetry at rest
- Difficulty in feeding because of impairment of sucking

Bilateral facial palsy can be easily missed as the facial symmetry is often maintained. Face examination should evaluate upper and lower half of face on both sides for movements, nasolabial folds as well as assessment of sucking. In addition, a detailed clinical examination including full neurological assessment, evidence of other features associated with difficult deliveries like bruising of scalp, haemotympanum, severe sutural moulding, Erb’s palsy should be looked for. Difficult delivery, prolonged labour, instrumentation especially forceps and evidence of other birth injuries suggest congenital aetiology. On the other hand, dysmorphic features, other cranial nerve palsies, other coexisting anomalies and family history of facial nerve palsy favour developmental cause.

4. Management in Postnatal wards (Appendix 1):
Majority of infants with congenital facial nerve palsy will recover with time. Attention to eye care to prevent corneal damage is paramount in infants unable to close their eyes(s). Eye lubrication with artificial tears or OC Lacrilube® ointment 4-6hrly should be commenced as early as possible in these infants.

Infants with facial nerve palsies associated with facial laceration should be urgently referred to on-call Plastic Surgery Registrar. These infants may require surgical exploration on an urgent basis. Medical photography should be contacted after parental consent to take photographs of the wound. Some infants with facial nerve palsy may have difficulty in feeding and may need additional support for establishment of the feeding. Other infants should be reassessed within 24hours time. In absence of full recovery at this time, a follow up in admitting consultant’s outpatient clinic should be arranged. All infants with facial nerve palsy should be discussed with the admitting consultant.

Infants with persistent severe palsy i.e. unable to close eye(s), complete absence of movement on the affected side, facial asymmetry at rest and difficulty in feeding, will need follow up in two weeks time. Infants unable to achieve spontaneous eye closure at discharge should be prescribed artificial tears or OC Lacrilube® ointment 4-6 hourly until the review in the clinic. Other infants should be booked in consultant clinic in six weeks time.
Additional management of infants with suspected developmental facial nerve palsy (see Appendix 2) will depend upon other abnormalities and may include involvement of multidisciplinary team like Genetics, Paediatric Neurology, family care team and physiotherapy.

5. Management in the clinic:
Absence of any recovery signs at 6 week follow up visit should warrant referral to Mr Ciaran O’Boyle (Consultant Plastic Surgery with special interest in Facial nerve palsy) and Ms Tambe (Consultant Ophthalmology). Infants with partial recovery at this visit will need additional outpatient assessment at 3 months. Persistent residual palsy at this stage will also need plastic surgery and ophthalmology referral. MRI Head including temporal bone (to include facial canal and inner ear)/ Neurophysiological investigations may be considered in consultation with Plastic surgery/ Paediatric Neurology team.
In infants with other cranial nerve involvement e.g. Mőbius syndrome (See Appendix 2), referral to Paediatric Neurology should be considered.

REFERENCES
Appendix 1: Facial Nerve Palsy Guideline Summary

Neonate with facial nerve palsy noted at birth or at newborn check

Antenatal history, birth history; detailed clinical examination including all cranial nerves and neurological assessment by Tier 2 trainee or Senior ANNP

Presence of facial laceration should warrant referral to on-call plastic surgery registrar

If infant can’t close eye: Start eye lubrication with artificial tears

Reassess with in 24 hours

Full Recovery

Discharge

Any of the following features:
- Complete absence of facial movement on affected side
- No eye closure
- Difficult feeding because of facial nerve palsy

YES

NO

OPD Assessment at 6 weeks

- Review feeding, eye closure and facial nerve function
- Ophthalmology referral to Ms K Tambe if not closing eyes spontaneously

Full Recovery

Yes

NO

- Referral to Mr Ciaran O’Boyle, Consultant Plastic Surgery and Ms Katy Tambe, Consultant Ophthalmology
- Consider MRI scan Head with temporal bone and Neurophysiology of facial nerve

Discharge
## Appendix 2:

Developmental facial nerve palsy: common causes, clinical features and management

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<tr>
<th>S No</th>
<th>Clinical Condition</th>
<th>Clinical Features</th>
<th>Management</th>
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| 1.   | Möbeus Syndrome    | -Facial nerve palsy (usually bilateral)  
-Other cranial nerve palsies (6th, 12th, 9th)  
-Limb abnormalities  
-Usually sporadic | -Karyotype and FISH to exclude 22q deletion and chromosomal abnormalities  
-Paediatric Neurology referral  
-Consider Genetics review |
| 2.   | Asymmetrical crying faces (ACF) | -significant unilateral depression of the lower lip with crying  
-10% risk of associated major abnormalities including cardiac defects | -As above +  
-Echocardiogram |
| 3.   | Hemifacial microsomia (includes Goldenhar Syndrome) | -1st and 2nd branchial arch abnormalities with variable phenotype  
- Ear abnormalities  
- mandibular, maxillary, orbital hypoplasia  
- facial nerve palsy or facial muscle hypoplasia  
- vertebral and eye abnormalities, hearing loss, cardiac abnormalities | -As above |
| 4.   | 22q deletion (DiGeorge Syndrome) | - dysmorphic features  
(almond shaped eyes, prominent nasal bridge, micrognathia)  
- heart defects  
- cleft palate  
- a subset associated with facial nerve palsy | As above |
| 5.   | CHARGE syndrome    | C: Coloboma of iris/ retina  
H: heart defects  
A: Atresia choanae  
R: Retardation of growth and/ or development  
G: Genital anomalies  
E: Ear anomalies with associated facial nerve palsy and swallowing difficulty  
-caused by defect in CHD7 gene | All of above +  
-Specific genetic test  
-Speech and language therapy (SALT) involvement if problems with sucking and swallowing |